Patent Claims:

1. A method for stabilizing a car-trailer combination, including a towing vehicle and a trailer moved by the towing vehicle, wherein the towing vehicle is monitored in terms of rolling motions and measures that stabilize driving are taken upon the detection of an actual or expected unstable driving performance of the towing vehicle or the car-trailer combination,
c h a r a c t e r i z e d in that the yaw velocity is detected and the measures that stabilize driving are controlled in dependence on a differential value that is produced from the detected yaw velocity and a model-based yaw velocity and evaluated according to criteria indicative of an unstable driving performance.

2. The method as claimed in claim 1,
c h a r a c t e r i z e d in that the frequency and the amplitude of each half wave of the differential value is determined, compared with stored values, and the rolling motion of the car-trailer combination is evaluated in dependence on the result of the comparison.

3. The method as claimed in claim 1 or 2,
c h a r a c t e r i z e d in that the frequency is determined from the zero crossings and the time between two zero crossings of the differential value.

4. The method as claimed in any one of claims 1 to 3,
c h a r a c t e r i z e d in that the number of the half waves of the differential value is counted, where the

amplitude of each half wave reaches or exceeds a threshold value, and where each positive and negative half wave of the determined frequency lies within a band defined by a top and a bottom threshold value, and measures that stabilize driving are initiated when a threshold value representative of a number of half waves is reached or exceeded.

5. The method as claimed in claim 4,
c h a r a c t e r i z e d in that the threshold value representative of a number of half waves is determined in dependence on the frequency.

6. The method as claimed in claim 5,
c h a r a c t e r i z e d in that at low frequencies, the threshold value is reached or exceeded with a smaller number of half waves than is the case at a high frequency.

7. The method as claimed in claim 4,
c h a r a c t e r i z e d in that the threshold value of each half wave representative of the amplitude is determined at least in dependence on quantities that represent the velocity of the towing vehicle or the car-trailer combination or the trailer.

8. The method as claimed in claim 7,
c h a r a c t e r i z e d in that with quantities describing a high speed, the threshold value is reached or exceeded at lower amplitudes than with quantities describing a low speed.

9. The method as claimed in claim 4, 7 or 8,
c h a r a c t e r i z e d in that only a consecutive number of half waves of the differential value is counted, where the amplitude of each half wave reaches or exceeds an entry threshold value, and in that the measures that stabilize driving are terminated when values reach or fall below only one exit threshold value ranging below the entry threshold value.

10. The method as claimed in any one of claims 1 to 9,
c h a r a c t e r i z e d in that data is produced from the variation of the differential value.

11. The method as claimed in any one of claims 1 to 10,
c h a r a c t e r i z e d in that the differential value is weighted with a value, which is produced in dependence on the steering angle velocity or the steering angle acceleration or the model-based yaw rate.

12. The method as claimed in any one of claims 1 to 11,
c h a r a c t e r i z e d in that the transverse acceleration is detected and the variation of the transverse acceleration is evaluated according to criteria which allow checking the plausibility of the data obtained from the variation of the differential value and being assessed according to criteria indicative of an unstable driving performance.

13. Method as claimed in claim 12,
c h a r a c t e r i z e d in that the maximum and minimum values of the transverse acceleration and their temporal

distances are determined, the frequency is determined and compared with the frequency of the differential value.

14. Method as claimed in claim 12,
c h a r a c t e r i z e d in that the method is terminated and the measures that stabilize driving are discontinued, respectively, when at least one of the following conditions is satisfied:

The frequency of a transverse signal, in particular the transverse acceleration, and/or the differential value reaches or exceeds or, respectively, falls below a top or a bottom threshold value.
The frequency of the transverse signal changes in relation to the frequency of the differential value towards a top or a bottom limit value.
The absolute value of the average value of the transverse signal exceeds a threshold value.
The amplitude of the transverse signal decreases with a high gradient.
The difference between the maximum and minimum values of the transverse signal lies in a narrow band.

15. The method as claimed in any one of claims 12 to 14,
c h a r a c t e r i z e d in that the phase shift between the transverse acceleration and the differential value is determined and evaluated according to criteria that permit defining driving situations.

16. Method as claimed in claim 15,
c h a r a c t e r i z e d in that the measures that stabilize driving are discontinued or the method is

terminated, respectively, when a threshold value indicative of a great phase shift is exceeded.

17. A device for stabilizing a car-trailer combination, including a towing vehicle and a trailer moved by the towing vehicle, wherein the towing vehicle is monitored in terms of rolling motions and measures that stabilize driving are taken upon the detection of an actual or expected unstable driving performance of the towing vehicle or the car-trailer combination,
c h a r a c t e r i z e d by an ESP driving stability control with a yaw rate sensor for sensing the yaw velocity and a vehicle model for producing a reference yaw velocity, with a determining unit determining a differential value from the yaw velocity and the reference yaw velocity,
with a control unit controlling measures that stabilize driving in dependence on data being obtained from the variation of the differential value and evaluated according to criteria indicative of an unstable driving performance.